WHAT:	Hackers 3.0 Conference, Press Brunch
WHEN:	Sunday, 11 October, 1987, 10:30 a.m. until noon
WHERE:	UAHC Camp Swig, 24500 Big Basin Way, Saratoga, CA
CONTACT:	Mary Eisenhart at (415) 652-3810 or during the conference at (408) 867-2180.

BACKGROUND

"Hackers, as most computer experts use the term, are distinguished not by their mischievousness but by their persistence and skill." This is how Phillip Elmer-DeWitt described the people that attended the first Hackers conference. Phillip's excellent background piece appeared in the December 3, 1984, issue of *Time* magazine and is copied on the back.

The first Hackers Conference came about when Kevin Kelly had the idea to bring together the people mentioned in Stevcn Levy's book *Hackers*. The group that carried out this idea was headed by Stewart Brand (the editor of *The Whole Earth Catalog*) and included Patti Phelan, Art Kleiner and Mathew McClure. The first Hackers Conference became a reality near Sausalito, California, in late 1984. The objective of this invitation-only conference was to have a brainstorming weekend with some of the hottest U.S. computer programmers and designers.

The second Hackers Conference was held at a secluded campsite in the hills above Silicon Valley in October, 1986. This conference was co-chaired by Glenn Tenney and Brett Glass, and supported by a team including Tom Mandel and Robert Bickford. The second conference was such a resounding success that David Bunnell dedicated an entire issue of his newsletter *Subroutines* to Hackers 2.0. With their permission, I have enclosed a copy of the entire issue

The third Hackers Conference will continue the tradition and will again be chaired by Glenn Tenney , and supported by a team including: Robert Bickford, Steve Cisler, Mary Eisenhart, Brett Glass, Tom Mandel, and Levi Thomas. We are again meeting at the same site as we used in 1986, but that is where the similarity ends. Some of the same people will be attending, but people's schedules keep changing so that the list of attendees changes from year to year. We are expecting this to be another exciting conference, with new and different insights into technology. The people attending may be well known to you, they may be unsung heroes, or they may be up-and-coming people.

Thanks to the generous donations of Steve Wozniak and Autodesk Inc., Fabrice Florin will again be videotaping this year's Hackers Conference. Fabrice, in association with KQED-TV, produced the acclaimed public TV documentary *Hackers - Wizards of the Electronic Age* of the first Hackers Conference. If you have not yet seen this show, or require footage from the first Hackers Conference, please contact Fabrice at (415) 751-8888. Additional donations this year might make another documentary possible.

Matt Herron, an experienced photojournalist and Black Star photographer, will once again be covering the entire conference. If you don't bring your own photographer, or you need photos from the rest of the conference, please contact Matt at (415) 479-6994.

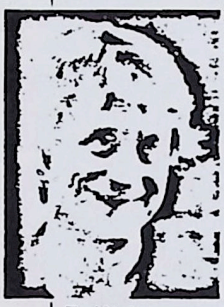
PARTIAL LIST OF PEOPLE WE'RE EXPECTING TO ATTEND

Allan Alcorn
Dennis R. Allison
Jeff Anton
Nickey Atchison
Bill Atkinson
Phillip Balma
Peter Baum
Bruce Baumgart
Andrew Beals
Mike Bentley
Robert Bickford
Nancy Blachman
Jim Blinn
David Boulton
Russell Brand
Stewart Brand
Larry Breed
Dennis Brothers
John Bumgarner
Bill Burns
Bob Burns
Nolan Bushnell
Michael Butler
Art Canfil
Peter Capek
David Caulkins
Richard Cheshire
Harry Chesley
Fred Cisin
Steve Cisler
Barbara Clifford
Ephraim Cohen
Corey Cole
Margot Comstock
Chris Crawford
Laura Creighton
Ken Crossen
Fred Curry
Charles Daney
Hugh Daniel
Buddy Diamond
Sam Dicker
John Draper
K. Eric Drexler
Steven Edelman
Howard Eglowstein
Mary Eisenhart
Doug Engelbart
Erik Fair
Richard Fateman
Lee Felsenstein
Scott Fisher
Robert Fleming
Fabrice Florin
Robert Fulop
Brian Gaines
Steve Gano
Robert Gaskins
John Gilmore
Brett Glass
Lynn Gold
Geoff Goodfellow
Jim Goodwin
Richard Greenblatt
Roger Gregory
Eric Gullichsen
Glen Haydon
Paul Heckel
Edson C. Hendricks
Matt Herron
Andy Hertzfeld
Terry Holmes
Chuck House
Dick Huston
Michael R. Iddings
David Intersimone
Tom Jennings
Carol Kaehler
Ted Kaehler
Richard Karpinski
Neil Katin
Charlie Kellner
Kevin Kelly
Bruce Kendall
Ed Kleban
Daniel Kottke
Stan Krute
Cherie Kushner
Mark Lacas
Ludis Langens
Brenda Laurel
Roy Leban
Tim Lee
Dwight Leu
John Levy
Jan Lewis
John Little
Mark Lottor
Larry D. Lowe
Dale Luck
Paul Mace
Chris Macie
Jim Mackraz
Tom Mandel
Jiesing Mao
Wayne Martin
David Maynard
Matthew McClure
Chuck McManis
Alan McNeil
Peter Midnight
Chip Morningstar
Ted Nelson
Bryce Nesbitt
Chris Neustrup
Steve Newman
Mike O'Malley
Fred W. Obermeier
Tim Oren
David Oster
Debra Panasuck
Michael Perry
Christopher Philipp
George Por
Jef PosKanzer
Jerry Pournelle
J. R. Prohaska
Jef Raskin
Ron Reisman
Randel Reiss
Howard Rheingold
Elaine Richards
Jeff Richards
Barbara Robertson
Dr. Joseph Rosen
Ed Rotberg
Owen Rubin
Rudy Rucker
Todd Rundgren
Jonathan Sand
John M. Sawyer
Steven G. Sawyer
Leo Schwab
Thomas Scoville
John Shoch
David Small
David Snider
Richard Stallman
W. Gregg Stefancik
J. R. Stoner
Johan Strandberg
Michael Swaine
Glenn Tenney
Larry Tesler
Levi Thomas
Bruce VanNatta
Robert Veline
John Walker
Bob Wallace
Walter Wallis
Michael Ward
Jim Warren
Bruce Webster
Robert Weisse
Lynn Wheeler
Guy Wicker
Scott Wiener
Randy Wigginton
Harry Wilker
Timothy Williams
Vicki Winslow
Steve Wozniak
Fred Wright
Jeff Young

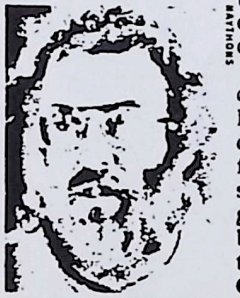
Let Us Now Praise Famous Hackers

A new view of some much maligned electronic pioneers

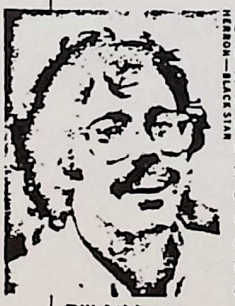
Legend at M.I.T. has it that one night in the mid-'50s some students paid a clandestine visit to Cambridge's Kendall Square subway station, where they quietly spread grease all over the tracks. The next morning, the first train that pulled into the station hit the grease and skidded right through the other side, taking its passengers to an unscheduled stop in the middle of a darkened tunnel. When the motorman backed up to see what had happened, the train slid through the station in the other direction as well. The ensuing snarl is supposed to have tied up transit officials and straphangers for hours.


Ted Nelson

For several generations of M.I.T. engineers, the subway prank was known as the ultimate "hack," the rare practical joke clever and elegant enough to be worthy of one of the world's most prestigious technical schools. Today the best and the brightest technology students are more likely to be found hanging around a computer system than a subway system. But they still call themselves hackers, and although they insist they have been misunderstood, their relationship with the public is once again on the skids.

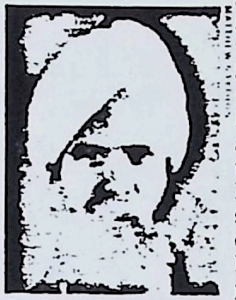

"Cap'n Crunch" Draper

Last year's hit movie *WarGames* and a series of well-publicized computer break-ins have created an image of a teen-age computer hacker that is giving the term a bad name. Many people now think of hackers as pests or perhaps even criminals. But the hackers themselves claim they are getting a bum rap from movies and newspapers. Says Bill Burns, an industrial psychologist and part-time hacker: "We are the victims of a major press screw-up."


Bill Atkinson

Hackers, as most computer experts use the term, are distinguished not by their mischievousness but by their persistence and skill. Some of the key breakthroughs in modern computer science, including the development of the personal computer, can be traced to these often fanatically dedicated people. Even today, men and women who are proud to call themselves hackers can be found in the research departments of almost any major computer firm, designing state-of-the-art machines and writing the software that runs on them.

Now some of the real computer whiz kids are finally getting their due. In a new book called *Hackers* (Doubleday; $17.95), Writer Steven Levy argues that these "science-mad people" are the true heroes of the computer revolution. He traces the history of hackers from M.I.T.'s Tech Model Railroad Club, their first mecca, to Silicon Valley's Homebrew Computer Club, an early microcomputer gathering spot, to a video-game factory in Coarsegold, Calif. Through it all he discerns a common thread: the unspoken assumption among crack computer programmers and engineers that they could straighten out the world by dint of their intelligence if they could only get their hands on the control box.


Sat Tara Singh Khalsa

The overpowering urge to compute, as Levy describes it, has always seemed bizarre to outsiders. At M.I.T. and Stanford the true devotees would skip meals, drop classes and give up sleep and social lives to burrow deeper and deeper into their beloved electronic brains. Once they started on a project, they would regularly "wrap around," working day and night until, after 30 hours, they collapsed on the nearest cot or sofa. Programmers at Stanford's Artificial Intelligence Lab eventually discovered that the space between the roof and false ceiling made a comfortable sleeping hutch, and some of them lived there for months at a time.

Two weeks ago, 130 of America's most devoted hackers gathered in the barracks of a refurbished Army post in Sausalito, Calif., at the invitation of a group of computer experts headed by Stewart Brand, editor in chief of the *Whole Earth Software Catalog*. Brand's idea was to bring together, for the first time, people from several generations of hackers, and his guests included some of the brightest stars in computing: Ted Nelson, author of *Computer Lib*, a widely read handbook from the mid-1970s; Stephen Wozniak, who built the original Apple computer; Lee Felsenstein, designer of the Osborne 1; Richard Greenblatt, who developed the LISP machines used in artificial-intelligence research; and Burrell Smith, a one-time Apple repairman who went on to build the Macintosh computer.

There were a fair share of shaggy beards, silver-winged baseball caps and even one turban, worn by a Montana-born programmer who now calls himself Sat Tara Singh Khalsa. But for the most part the hackers looked more like backpackers or professional musicians than any stereotype image of computer nerds. By day, they met for discussions and debates that included a face-off between Donn Parker, a computer-crime expert, and John Draper, the legendary "Cap'n Crunch," who developed a system for making free phone calls by using the toy whistle from a breakfast-cereal box to imitate the tone used by A T & T for long-distance calls. At night the hackers clustered around a dazzling array of computer hardware that beeped and glowed until 4 o'clock each morning.

Most of the weekend conference, though, was spent trying to plot the future of hacking in an industry increasingly dominated by marketers and venture capitalists. Everyone present seemed to agree that commercialism had changed the nature of computing. What was less clear was what the new rules for hacking ought to be. Said Bill Atkinson, author of a flashy new program called MacPaint: "The question is, how do you spread excitement around?"

Many first-generation hackers, having struggled with the red tape that surrounded million-dollar systems in the early days of computing, tended to view such things as copy-protection schemes, which make it difficult to steal programs, as barriers to the free flow of information. Other hackers, however, protested that anyone who spends thousands of hours writing a program deserves to earn royalties on it. Said Robert Woodhead, co-author of a best-selling game called Wizardry: "My soul is in my product."

Stephen Wozniak

As the industry has matured, so have the pioneers who helped build it. Most of the high priests of hacking have long ago grown out of the prankstеrism associated with their name, and many feel it is time they set an example for the next generation of computer fans. "It's one thing for a high school kid to show off how he can dial the phone for free," says Brian Harvey, an M.I.T. hacker turned high school teacher. "It's quite another for an adult to go around encouraging schoolkids to steal."

—*By Philip Elmer-DeWitt*

SUBROUTINES
David Bunnell's Newsletter From Inside the Personal Computer Industry

VOLUME 5
NUMBER 10
NOVEMBER 1986

LASERLETTER

Hackers 2.0

PC Visionaries and Industry Legends Debate Micro Future at 1986 Conference

For some of the 194 attendees (180 men and 14 women) at the recent Hackers 2.0 Conference held in the wooded hills of Saratoga just outside Cupertino at Camp Swig, a Jewish summer camp, it was midlife hack. Fewer anorexic-looking anarchists were in evidence than at the last conference, in 1984, and far more potbellied, T-shirted micro-maniacs are pushing 30 and beyond.

But even amid the red hues of autumn leaves, the dominant color was that of highly dense gray matter, a kind of smoldering intelligence that manifested itself in little group sessions gathered outdoors under the trees, on the lawns, and in the sunlight.

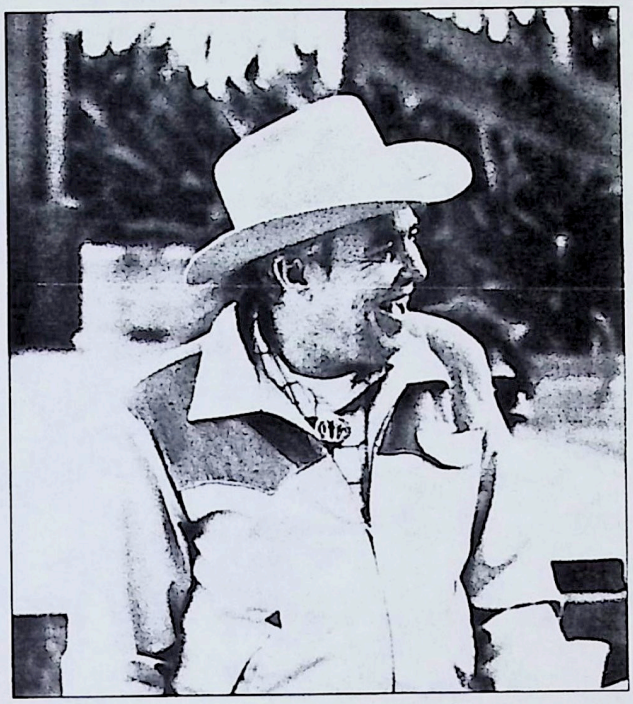
Indoors, cabins with bunk beds housed inanimate forms resting from all-night hacks and talks, while the equipment room buzzed with 8-10 Macs, including one Prodigy 4, by Levco; Apple IIGSs; Atari STs; Amigas; Sun workstations; and super-powered IBM PC and AT clones. Laptops and other computers were spotted throughout the camp, and adjacent to the equipment room ran nonstop computer-generated graphics videos.

The Hack Pack

There was no telling whom you might run into at the snack and drink area: from mythical bad boys like **John** (Cap'n Crunch) **Draper** to archetypal visionaries like **Ted** (Project Xanadu) **Nelson** and **Lee** (Community Memory Project) **Felsenstein,** as well as hacker emissaries from Pacific ("If you can't fight 'em, hack with 'em") Bell, and even some incognito hackers from IBM who temporarily buried their blue suits.

There were industry leading-edgers, like **Chris Espinosa,** Manager of Developer Support at Apple, who was discovered at the young age of 14 by **Steve Wozniak**; **Doug Carlston**, President of Broderbund Software; **Robert M. Carr**, Chief Scientist at Ashton-Tate and the designer of *Framework*; **Jef Raskin**, who started up the original Macintosh team and now has a product that is, in his words, "as much an advance over current technology as the Macintosh was in its day"; and **David Thornburg**, developer of the Koala Pad.

The event attracted mild-mannered hackers such as **Greg Bailey** ("real problems cheerfully considered, reality loosely defined") and **Donald M. Brown**, author of *MockPackage, MacBillboard*, and *The Wonderful World of Eamon*. Mind amplification engineers like author **Howard** *(Tools for Thought)* **Rheingold** were there, as well as hackers from outer space such as **Timothy Leary**, who is under contract with Activision to produce three "mind movies" based on **William Gibson's** hacker cult classic *Neuromancer*; and cybernetic historians-cum-process engineers like **Nickey Atchison**, of Ferranti Interdesign, who has rewritten the history of Western culture from the early Samarian to the sixteenth century based on his theory of "the cultural relativity of reality."



The articulate Col. David Hughes (left), a self-avowed fundamentalist for freedom, threatened to shoot it out with Star Wars-Hawkish computer columnist and sci-fi writer Jerry Pournelle (right).

One hacker even achieved the world's first "four-billion-mile hack": **Jonathan V. Post**, the engineer who was chiefly responsible for hacking the historic photos of Uranus and its moons ("My favorite is Miranda") taken by the Voyager spacecraft.

For my money, the most interesting character at the conference was cowboy-hatted, string-tie-sporting **Col. David Hughes,** a self-avowed fundamentalist for freedom, who threatened to shoot it out with Star Wars-hawkish computer columnist and science fiction writer **Jerry Pournelle**. Col. Hughes, a "saloon journalist," runs Roger's Bar in Colorado Springs, where beer-quaffing truck drivers can debate matters of public policy over his computer bulletin board with generals from the Pentagon.

Still Hacking

The conference proved one thing: that hackers are alive and well–and on The Well. There is still a vibrant hacker community, and it is still having a significant impact on personal computer development, beyond the scope of their limited numbers and sometimes meager resources. Many, like Apple's Espinosa, are now in key positions in the industry and are forces to be reckoned with.

The camp setting made for a very relaxed event at which the creative spark was evident. **Robert Carr** said he came to "feel the pulse." Ideas were exchanged freely without fear of repercussions. You could be lively or deliberate, or as egotistical as you liked, and no one was mean or hard-hearted. **Jerry Pournelle**, who was trying to establish some sort of a power quorum with his Star Wars diatribes, was the notable exception.

After spending a couple of days visiting with the visionaries, I came away with the impression that the hacker community is more conservative than ever before. Certainly still outspoken, but with more diverse viewpoints, they aren't nearly as radical as in the past. Only a few advocated that software should be free. The atmosphere has changed a great deal, partly because of the end of copy-protection. That battle is already over, and there seems to be more harmony among the hackers and the industry.

But brewing under the surface at the conference were new concerns and new issues confronting these maturing misfits of technology.

Issues and Answers

Midway through the first Hacker's Conference, the gathering began to focus on on-line bulletin boards. This year the emphasis was on the future. We all know that lots of changes will be occurring during the next five years. The CD-ROM, the 386, and the Open Mac are only the tip of the advancing iceberg.

There was a focus on networking and on-line communications, but the questions were phrased differently: Why aren't our PCs linked yet? Why aren't we using the modems, bulletin boards, and electronic mail we already have? Why isn't there better software for doing these things? Look at the success the French are having with on-line Videotex. Why do we disdain Videotex so much, and why don't we see that this is an area that has the most exciting potential for boosting PCs into homes, schools, and businesses?

We could turn the PC into a window, a machine through which all this information flows–our memos, E-mail, technical data, and conferences. When this happens, we will really see the growth of computers. Until then, we can only hack and dream.

The New Breed

Worrisome to hackers is the sense of impending schism, a generational divide between the elder statesmen and the unruly no-shows. Very few young hackers were present. Where are they?

"We are the new technology elite," **Chris Espinosa** bemoaned. "We're talking about stuff that isn't even new. But we are going to see in the next few years a segmenting of the hacker community. The companies and us will be working on the new technology and moving it forward. And there will be a wave of hackers behind us who are essentially scavenging–the Road Warriors of software."

The PC is like the Model T. People customized their Model Ts in different ways. Some turned them into little delivery trucks, while others transformed them into sportier luxury cars. The second wave of hackers will turn their Apple IIs and power PCs into microprocessor Frankensteins and hard disk Golems.

Hatchet Job Award

This award goes to **Jerry Pournelle** for pulling out a double-edged axe from his rucksack and wielding it the first night of the conference. "I came here to hack!" he cried. The hackers within striking distance did a slow scan on his equipment and pronounced: "Double-sided, double-density!"

The 85.6% Solution

Donn (Bald Eagle) **Parker**, Senior Management Systems Consultant for SRI, has the number to suit all occasions: 85.6. His new, as yet unpublished book, *The Numbering of America*, offers a sharp look at the new scourge of America. "It used to be illiteracy," he says. "Now it's innumeracy. I got started worrying about numbers because I became the guru of computer crime statistics. Journalists would take numbers from my tabulations and publish them as if they were representations of the entire problem, which they absolutely are not." Parker's revenge: Any time anybody asks him for statistics or figures, he offers the believable-sounding but meaningless 85.6. When he's asked "85.6 what?" he replies, "85.6 whatever."

Making Whoopi

It used to be tune in, turn on, and drop out. Now it's "punch in, jack in, pull out, and get to the point, especially with this audience," **Timothy Leary** noted as he chatted with author **Howard Rheingold**, who's working on a "mind amplification" tool for Activision. "What we really need is a mind-erase program," Rheingold observed. "People are restricted from changing what they know. We need a tool to leverage everything out of your head and let something new in."

"We should do that to Reagan," commented Leary. "Just think what would happen if you took a speech by **Jerry Falwell** and replaced **Whoopi Goldberg** for every occurrence of the word Christ."

Blank Mail

Hacker poster artist **Roger Gregory** was grousing to **Glenn S. Tenney**, conference organizer: "You didn't put my phone number or my net address on the poster so people have to send me stuff by paper, which I don't read."

Diamonds Forever

Buddy Diamond, Chairman of XOR Corp., a self-described pioneer in "anthropotronic engineering" and an adviser to the National Security Council "on how to cut costs in Central Europe," was describing a fellow hacker in anthropotronic terms: "He's the original polymorphic leucocyte, but he's a friendly one!"

In the meantime, Buddy is bringing out a Mac version of his best-selling *NFL Challenge*, and he's got some new marketing tricks up his sleeve. "We're becoming Publishers' Clearinghouse," he said about his 325,000 direct-mail effort, which offers prizes (tickets to NFL games). "We've got to get around the dealers," he said.

Hugh Daniel hacks as Timothy Leary (seated) and Howard Rheingold look on.

The Message

Upgrading McLuhan, **Howard Rheingold** described the bulletin board medium as the new tool for social connecting: "The message is the address," he says about communications systems like The Well. "The experts you contact don't know who you are or where you are, but they know what the subject is. It leads to an interesting coalition of minds working on the same problem. A 12-year-old could be discoursing as an equal with a Nobel Prize winner."

Hackers' Heaven

It was happy hour for the hackers in the equipment room. You couldn't pry some away from Maze Wars. A total of eight players–on eight Macs–simultaneously played the game. **Hugh Daniel**, Project Xanadu programmer and keeper of The Well, was delving into a 3-D program by 3/D/Graphics on the Sun workstation. Someone asked, "Is that a personal computer?"

"This is what I consider a personal computer," Daniel replied, refusing to be unseated.

Askin' Raskin

Jef Raskin, CEO at Information Appliance, Inc. and whose SwyftCard and SwyftDisk use one button to handle all disk operations, was describing the state of grace associated with the ideal interface. "Say, there are two alternative commands, each of which is faster than the other in some situations. If the time saved by using the 'right' alternative rather than the 'wrong' one is less than the time taken to decide which one to use, it will be beneficial to provide only one alternative, since the total time and effort will be less." This is part of what Raskin calls the principle of "monotony."

The Interface Debate

"What is the difference between easy to learn and easy to use?" the hackers were asked. Should there be a distinction between an expert and a naive user in terms of designing an ideal interface for a program?

Ted Nelson suggested one ideal prototype for tomorrow's office systems that was familiar to everyone. "You can learn PacMan or Ms. PacMan, which is the upgrade, with two quarters....Yet how many people have read the manual?" he challenged. The different interactions are revealed to the user as he progresses, Nelson noted. "The office systems of tomorrow must allow the casual user to come up and start poking, and get satisfactory results within the limits of that poke–and gradually to be self-revealing in the same way as PacMan."

Gus Fernandez, a Macintosh software developer at Apple who is especially interested in visual programming environments, begged to differ. "There is a much more fundamental distinction between games and products," he maintained. "With games you are actually looking for new experiences, looking to see what is beyond the next door, trying to see what is beyond the next level. With products, you are interested in getting your work done with as few surprises as possible."

Shareware marketing pioneer **Bob Wallace** thought there should be something for everybody. "People tend to be diverse," he said. "Some people are very visual; then there are those who will want icons. Some people are verbal–they like commands. Some are piano-player: They peck, they like control, they like WordStar. I don't see why we can't accommodate all those people at once."

The Features War

Scott Wiener, founder and head of R&D for Ann Arbor Softworks, added his two bits to the interface debate: "Thinking about the Macintosh, what we found is that the Mac interface isn't so much a destination as an origin. You write a product that adheres to the interface; it gives the user a safe house and a set of things he can do in a way that cuts across applications," he said.

"The problem is that we're in a features war in the real-world marketplace. No one wants to write a product that does things that their marketing people can't talk about, because then they are not getting the most bang for their buck," Wiener lamented.

"What we're doing is based on a different approach. What we'll build into the system is something that's incredibly more powerful and that people can explore at their own pace and find out that the product is a lot more sophisticated than they started off thinking it was.

'The office systems of tomorrow must allow the casual user to come up and start poking–and gradually to be self-revealing in the same way as PacMan.'

Ted Nelson of Project Xanadu

"What it really means is, you have freedom as a developer. We are into aesthetics at Softworks. We want to extend the user interface of the Mac without having to apologize for it. Because you're not trying to cram things into some system that already exists, you can extend it in new ways."

New Definitions

Because he coined the term *hypertext*, **Ted Nelson** was asked to dust off the historical definition. It was like asking Sinatra to sing "My Way" with footnotes. Of course, Nelson obliged.

"I define it as nonsequential writing. We've been doing it for years. We've been speaking hypertext all our lives and never knew it. It's essentially nonlinearity of speech. The fact that pages have to be numbered because of the way books are built has led us into thinking that things need to be in sequence, whereas the best expositions are those you pursue yourself through nonsequential structure."

Nelson was far more interested in a newer, fresher archetype–"virtuality"–as a means of addressing the interface ideal. "That's a far more productive concept," he said. "A movie is all virtuality. Virtuality is the seeming of the thing rather than the physical reality. In a movie, you deal only with seeming; nobody cares if the set is made out of cardboard, Styrofoam, or metal. Few things have no virtuality, meaning that you don't want their conceptual structure to be revealed. That's the fish hook.

"I define virtuality as two things," Nelson posited. "The conceptual structure and the feel. All autos have some conceptual structure: front, back, left, right, taillights. But the feel is what you pay for. It's the door slam, the gloss, and the girl in the ad. The same thing is true for the computer system. The fine-tuning of the video game, for example.

'What we're doing is making [users] like us, but that's the only way they can be happy.'

Chris Espinosa, Manager of Developer Support, Apple Computer

"The object is to design virtuality, to design conceptual structure, and to work out the way it should feel. It is the design of conceptual structure that is primary; implementation is secondary. You have in your mind what you want to build; then you make it happen. It's working backward from the vision, like a moviemaker, rather than saying, 'Well, we've got a pretty good command here. This will form the nucleus. I guess the next thing I'll do is....' So much software has been done that way, which is precisely why it is so hard to use."

Narcissus Complex

"Face it, what we are talking about here is ego," said **Chris Espinosa**, striking a programmer's nerve. "If you have a system that is trying to outsmart the user, the user is going to feel offended, their intelligence is going to be belittled, and they are either going to try to outsmart the computer, which is going to be hard, or they are going to dislike it because it is smarter than they are.

"When you can empower [users] to make your application theirs–to customize it for their purposes–that's the degree to which you are going to increase people's satisfaction and productivity. What we're doing is making them like us, which may or may not be a good thing, but that's the only way they can be happy."

"Are they happy?" **Tom Mandel**, Senior Program Manager at SRI, asked. "Some are, some aren't. They don't know."

Now You See It

Ed Kleban, Director of Advanced Technology at Ken Orr & Associates, cited his favorite programming language: visual programming. His favorite application: building a pinball machine. "You pick up a flipper, put it here; pick up a chute, put it here; pick up your paintbrush, paint it green, and put your initials on it. I like it because the environment to adapt it in is the same environment that I'm going to use it in. Visual programming is a very big thing with lots of neat, exciting things coming. That's the level I'd like to see–the ability to put adaptability into my tools."

Nixed Metaphor

Which came first, the chicken or the metaphor? **Lee Felsenstein** is more literal when it comes to abstraction. "I'm still on the side of metaphor," he says. "Everybody has to compare what they are seeing now with what they know. The problem is that the part of technology we are working in makes it possible for us to leap way ahead of the metaphorical development that we should be doing, so we don't do that metaphorical development [of our programs]."

Ted Nelson was adamant: "It can't be evolution; it has to be by huge leaps. *Sketchpad* had no metaphor, no precedent, and it is still only available in a pale version as *MacDraw*."

Chris Espinosa chimed in, "It's nice to have somebody on the team–if there's this big well-funded team–but who's in charge of the metaphor? This is really the key person. We can do our job properly, but if the metaphor keepers blow it, we've lost our life line."

Gus Fernandez had his own insight: "Pretty soon things become themselves and don't need the metaphor nearly as much. For example, the Macintosh desktop metaphor. You're still talking desktops and icons, but you are really not thinking in terms of desks full of paper. You are thinking about them as entities unto themselves."

Meaning Factor

David Thornburg, owner of Innovision, was bemoaning the fact that it's still easier to get shelf space for a product that is yet another word processor or yet another spreadsheet than it is "to go into a product that lets you gobble your zits, because nobody knows why you would want to do that or even what it means to do that."

To which one hacker retorted, "Do you think that porkbelly commodity futures are any less abstract than zits? What I'm saying is that every application has its own levels of abstraction, which you can't really bring over."

Paradigm Lost

"If you ask people what they want, you'll make a thing that's known but you'll never make anything new," remarked **Brenda K. Laurel**, Director of Product Development at Activision. "The paradigm is if I had gone out in 1958 and asked people what they wanted, nobody would have said they wanted a plastic hoop that they could rotate around their hips."

One hacker disagreed: "I would have!"

Designer's Kludge

Charles Simonyi, Manager of Applications Development at Microsoft, was discussing the kludge factor in software design. "If somebody wants feature *X*, you give them feature *X*. Then somebody says, 'Give me feature *Y*,' but adds, 'I don't like feature *X*.' We tell him, 'Great, we're going to make feature *Z*, which turns off feature *X*.' "

The Future

At a session on the future of software, one hacker was having an existential midlife crisis. "How am I going to start modifying myself to live with all the possibilities I can be when I'm processing a computer? How do you unperipheralize yourself and take out the interfaces you have without feeling like you're having pieces ripped out of you? How do you feel that you are really part of society–not just a hermit in a shack living away from the rest of the world?"

Charles Simonyi, Manager of Applications Development, Microsoft

Robot Sweepstakes

As the moderator for that session, **Ed Kleban** asked his hacker wards to envision "the next real goodie along the line that we can foresee, and it's not CD. It's something that nobody's got one of yet. What is it?"

Answer: Hackers love robots, and even the most indigent hacker would scrape up as much as $10,000 for a "real genuine robot."

What would they do with one? Here is a cross-sampling:

"One of my hobbies is building model trains. It would be really neat if I had little model people on little model trains."

"I want mine to have little adventures, see what's over there and come back and tell me–do fun little things that I haven't got time for. 'Go sit in this meeting for me. I don't want to be there.' "

"There's going to be regional gravel pits where you send your little robot tanks out to fight against somebody else's tanks."

"The demand for robots will definitely increase because of all the little kids who grow up watching 'Transformers' and 'Go-bots.' "

One hacker dissented: "One of the things about computers being used in executive offices is nobody is going to use a computer, especially an executive, when he's got the best voice recognition system sitting at a desk nearby. It's called a secretary."

Another hacker wondered, "Are people going to have affairs with their robots?" Someone replied, "Undoubtedly some will."

"I'd like my robot to drive my car looking for a parking spot, and move my car around so I don't get a ticket," one hacker said. "Great!" another snapped, "The streets will be full of robots running people over. The lawyers will love it."

The most practical hacker in the group said, "I want my robot to build five more, and those five to build 25 more."

Bio-Hack

Scott Wiener offered a prediction: "Bio-technology is going to make computer technology seem unimportant." **Hugh Daniel** one-upped him: "I predict that neuro-technology is going to make bio-technology seem unimportant." To which Wiener responded, "And I predict that we'll have bio-technology at least 30 years before we'll have neuro-technology."

The discussion then got a bit out of hand. How do you define bio-tech?

"It's getting creatures to do things for themselves, like using DNA to make a virus to make interferon."

"We're on the single-cell level right now, right?"

"No, we already know how to make elephants."

"Yeah, it's real easy, all you need is two elephants."

"But they can't make a toaster."

"MacScience is working on it. . . ."

$100,000 Reward

Ed Kleban challenged the hacker assembly: "I want to hear the software version of 'Name That Tune.' " He offered them $100,000 for one year's work. If they could do anything they wanted, what kind of a program would they deliver by next year's conference?

"You are going to have to sign a contract, guys," he said, "although I'll be fairly lenient. But you are going to have to buy your computer out of that $100,000. If you need a Mac and you need to go out an eat sushi every night, those are the trade-offs you have to make."

Someone groaned: "There goes the hundred grand." Kleban backed off, "Okay, one should never put a hamper on creativity. I'll give you free access to the workstation of your choice." One hacker griped: "One is not enough!" Kleban was firm: "I don't want a major program project that will take ten people. You use a VAX, an Amiga, a Sun, a LIST machine, something realistic, something you can get today."

The following are some proposals:

"Your own morning newspaper. However you want it, from around the world, whatever stories, whatever editorial slant you want. If you don't like right-wing stories, you don't like left-wing stories, if you like a little *Weekly World News* in your morning newspaper. . . . The information is there, it's on the wire. All you need is a machine that can pull it out, go through it according to what you want, and learn as you read. It's got to watch you read the news to see what stories you like and don't like, and analyze the stories that are coming in and ask, 'You think he's gonna like that?' "

"Okay, I'll sign the contract on that one," said Kleban. "You got your hundred thousand."

"A novel-generation program, whether it be romance or generic sci-fi," one hacker began. "Novel Writer, University of Wisconsin, 1976, that was a prototype," another hacker cut in.

"I know of no one at Softworks who can write a program without having at least one other person to argue with," mused **Scott Wiener**. "Hey, if you have to pay ten grand a year for someone to argue with, that's your own problem, your own hang-up," Kleban retorted.

Chip Morningstar, a designer/programmer for LucasFilm, proposed, "In a year I'll deliver to you, on my ideal workstation, a bunch of pretty graphics programs that make pictures that I think are beautiful."

"Will I enjoy them when I see them?" said Kleban, wanting some assurance.

"I don't know," Morningstar conceded.

"I think you need to work a bit more on your specs," Kleban advised.

One hacker suggested, "The networked 3-D combat program with 3-D sensors on every part of your body." Kleban bought the project and ordered ten for the next hackers' conference.

Russell ("Wuthel" in LISP) **Brand**, an MIT hacker now transplanted at the Lawrence Livermore Lab, proposed "a text analysis system that will go through your diary and stop you from f-----g up your life. I want something that says, 'The purchase you're being pressured to make is. . . . ' "

'Visual programming is a very big thing, with lots of neat, exciting things coming.'

Ed Kleban, Director of Advanced Technology, Ken Orr & Associates

The Next Step

What's the next software thing that hackers need? "What's going to make our bit-twiveling lives easier?" Kleban posed.

"A truly personalized computer that the longer you operate it, the more it learns your quirks, the better it gets at anticipating you, the better it gets at reading your mood. You wouldn't want someone else to use your computer any more than you would want someone to use your toothbrush," one hacker noted.

"When I can't tell the difference between my computer and my little brother's personality, it will have arrived," another hacker pontificated.

"I want something that acts sort of like a mentor friend," said one. "It doesn't go out and do everything for me, but it says, 'Hey, I was reading the paper, and the stock you've got just halved in price. Pay attention!"

Kleban asked, "You want an electronic Jewish mother?" He added, "You have heard all about the new products coming out from the major car firms in terms of ethnic speech synthesizers and the Jewish mother model that says, 'You're leaving your lights on, you don't like me anymore."

Sightings

The first packet radio, designed by **Mike Bentley**, a Chicago software engineer who specializes in process control, CAD/CAM, and weaving "untangled webs for industry."

Chuck Moore's Forth on a Chip, a homemade portable computer resting inside what looked like a homemade briefcase, "is one-tenth as fast as a Cray," he said.

Release 1.0 of Jolt was launched at the conference. No, it's not a software program; it's a cola. (The label boasts "All the sugar and twice the caffeine.") The company donated a few cases to try out on the hackers. "They're never going to make a healthy cola so they quit trying," **Mike Bentley** commented. **Jan Lewis**, from the Palo Alto Research Group, who'd been up all night, gave a testimonial: "I had three Jolts in the last hour, and I feel great!"

Jim Edlin, President of The Softer Interface, reported, "I'm sort of doing things cafeteria-style these days. I've got four to five projects, and I'm still selling *Wordvision* out of my kitchen." Edlin says he's been "captured by the vertical muse" and is about to test a newsletter aimed at PC applications in advertising agencies entitled *Edlin's PCs in Agencies Newsletter*.

Lost at Sea

Steve Wozniak was conspicuously absent this year. The rumor was that he had been offered a free gambling junket on a new cruise ship.

The Establishment

Todd Rundgren, best known as a musician with interests in "high-performance music combined with high-performance graphics," said he was surprised to note that the hackers at the conference do not appear to be "prepared to make a commitment to the next level of technology. They're essentially happy "just writing to the machines they're already writing to," he noted.

'We don't need glitz. We don't need Regis McKenna.'

David Thornburg of Innovision

"I think there's an aura of the hacker establishment here," he observed. "There's a heightened economic urgency here that I probably didn't expect because a lot of people are now in business, as opposed to doing it for the fun of it."

"I haven't heard a lot of concrete new things here," Rundgren said. "Xanadu is an old thing. The biggest new thing here is an old thing.

"I was hoping for more than a Rotarian convention," he said. He suspects that the hackers are waiting to see what IBM does next.

Exclusive Excerpt

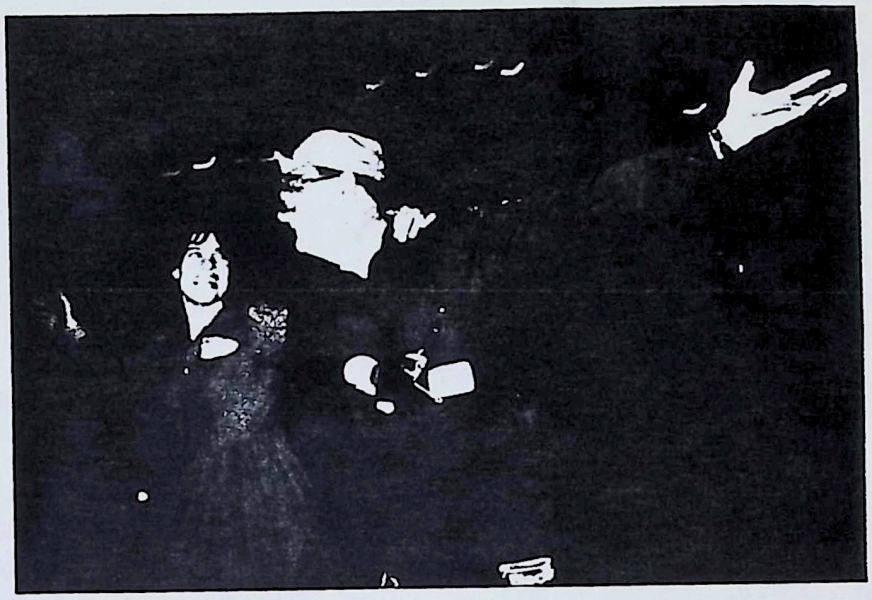
Here, exclusive to *Subroutines*, is the first paragraph from **Jonathan V. Post**'s unpublished hacker novel: "Yes, I'm a mad scientist. But you'd be mad, too, if they did to you what they did to me. They called Bruno mad for suggesting that there might be an infinite number of worlds, and they burned him at the stake. They called Galileo mad for looking at other worlds and kept him under house arrest." Let's hope they don't arrest Post and burn his manuscript.

The Neuromancer

Timothy Leary, guru of bygone days and hacker of the third eye, came to check out the action. Leary has a three-product deal in the works with Activision to do "mind movies," based on the William Gibson hit tome *Neuromancer*, which is also being produced as a film.

Leary's mind movie is quite a major production, too. It involves the work of four writers and four technical people, including **Kevin Piette**, co-author of *MultiMate*, **Jojo Hansen**, one of the programmers for *NFL Challenge*, and **Mickey Wozniak**, the Director of Project Management at Ashton-Tate. Leary has also brought in artists **Keith Haring** and **Peter Max** and photographer **Helmut Newton** to contribute in the graphics department.

Neuromancer, the mind movie, will feature eight acts and a total of 128 scenes, which the player can design and redesign. Players can also select real life actors such as **Dennis Hopper** or **Grace Jones** to play certain roles. The player chooses the level of production: blockbuster, art movie, documentary, and so on. In the end, it faces algorithmically generated critical reviews. When the game is finished (it takes 2 to10 hours), the player selects screen mode and can view 5 to 15 minutes of graphics and text scenes.



Nancy Blachman and Lee Felsenstein dancing at the costume ball hosted by Borland International. Nancy has been hacking software for 14 years and currently works at the Research Institute of Advanced Computer Science in Palo Alto. Lee is President of Berkeley-based Golemics.

"There are literally trillions of ways to do the film," Leary says. And if that is not enough film-making for him, Leary's company, Futique, has the mind-movie option on the upcoming *Rafferty* film featuring the new, high-tech James Bond character.

"We want to position ourselves for CD-I," Leary said.

That's Entertainment?

Borland President **Philippe Kahn** sponsored a gala Halloween ball for the hackers on Saturday night. He sent, compliments of his perverse sense of humor, a dance band to provide the evening's entertainment. With 180 men and 14 women in attendance, I ask you, Philippe, *et tu, Brute*?

On the last day of the conference, the hackers voted to have the event every year, but to be sure to invite more women.

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The photos in this issue were taken by Matt Herron, except the one of David Hughes, on page 2, which was taken by Jim Warren.